

Periodic Trends and Ionic bonding REVIEW GUIDE

Answer the questions below:

1. Dmitri Mendeleev's is the man given credit for creating the periodic table.

Circle the statements that are **true** about his table below:

- left gaps for elements that were predicted to be found
- had every element in the correct place
- there were places where the elements were out of order
- organized elements by increasing atomic number
- organized elements by increasing atomic mass
- organized the elements by similar chemical properties (reactivity)

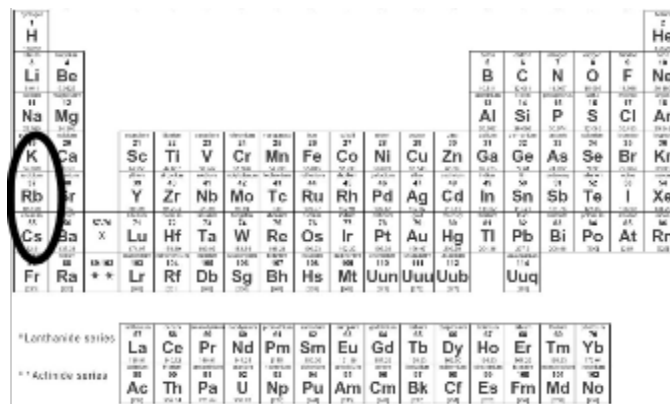
2. Who organized the periodic table by increasing atomic number?

Understanding periodic trends:

For # 3-6 use the following answer choices

- Rubidium
- Cesium
- they are equal

- Which atom has the largest **atomic radius**
- Which atom has the largest number of **protons**
- Which atom is the most **reactive**
- Which atom has the most **valence electrons**

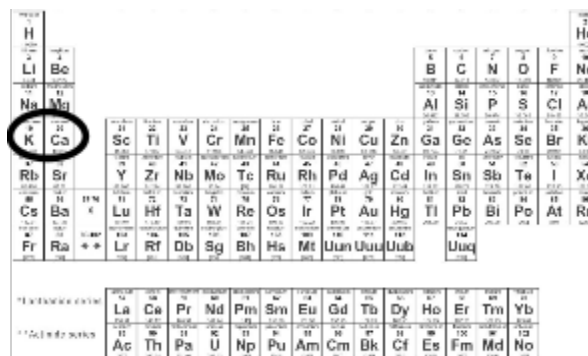


Periodic table showing elements and their atomic numbers. The elements Potassium (K) and Cesium (Cs) are circled in the first column.

For # 7-11 use the following answer choices

- potassium
- calcium
- they are equal

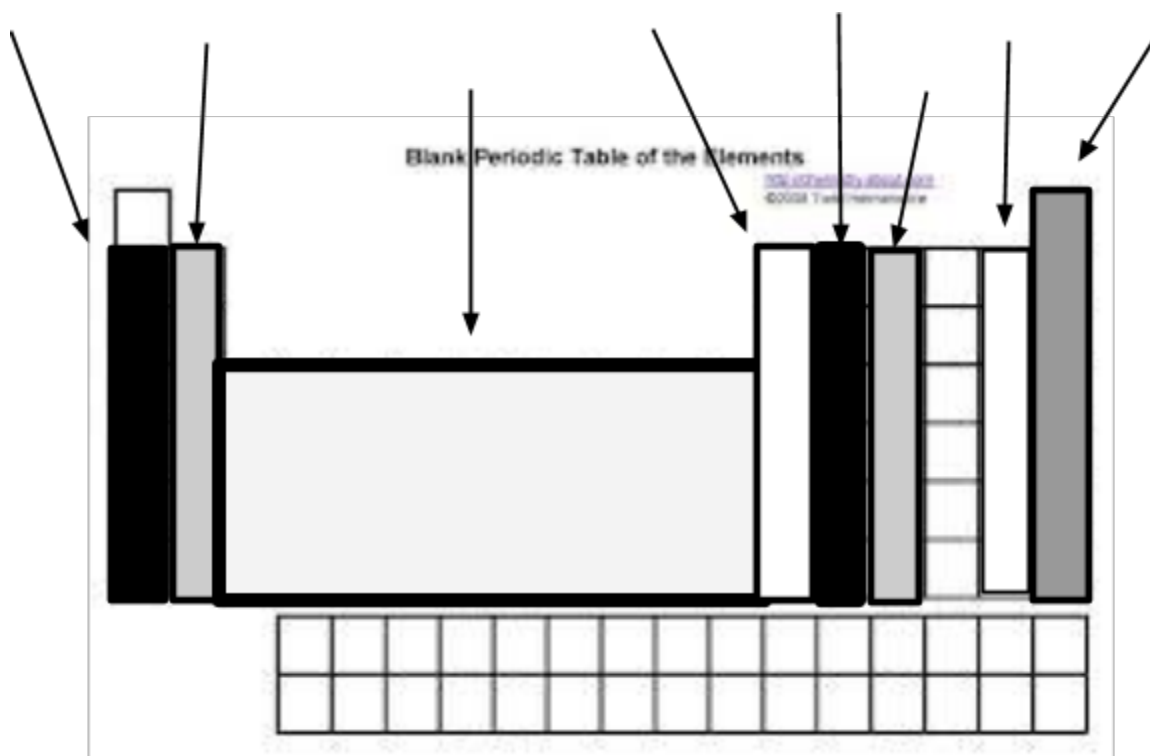
- Which atom has the largest **atomic radius**
- Which atom has the largest number of **protons**
- Which atom is the most **reactive**
- Which atom has the largest **atomic mass**
- Which atom has the most **valence electrons**



Periodic table showing elements and their atomic numbers. The elements Potassium (K) and Calcium (Ca) are circled in the first two columns.

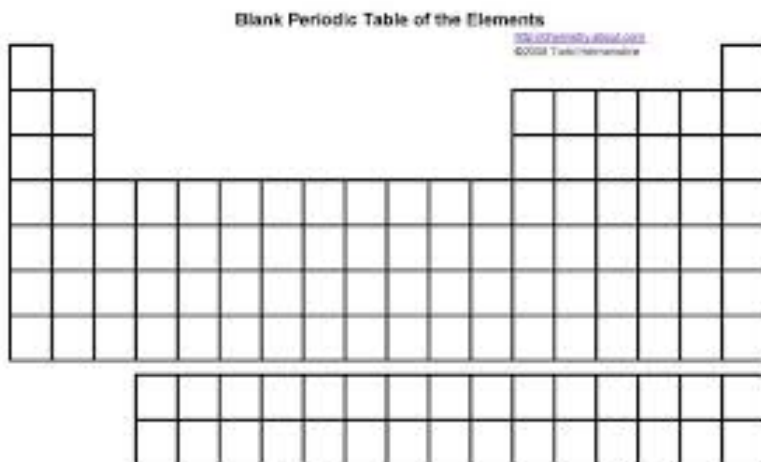
12. Label the diagram of the periodic table below using the terms below:

- a. noble gases
- b. boron family
- c. alkaline earth metals
- d. alkali metals
- e. transition metals
- f. halogens
- g. nitrogen family
- h. carbon family



13. On the diagram below:

- a. shade the metalloids
- b. circle the metals
- c. stripe the nonmetals



14. List 5 properties of metals:

- | | |
|----|----|
| 1. | 4. |
| 2. | 5. |
| 3. | |

15. List 4 properties of non-metals:

- | | |
|----|----|
| 1. | 3. |
| 2. | 4. |

Answer the following questions:

16. Atoms want to achieve stability, to gain stability they need _____

17. Elements found with full outer shells are in main group _____

18. Atoms that have the same number of protons but a different number of electrons are called **ions**.

a) If an atom has a larger number of electrons than protons,
it will have a _____ charge. (positive or negative)

b) If an atom has a smaller number of electrons than protons,
it will have a _____ charge. (positive or negative)

c) The number of _____ never changes

d) _____ tend to lose electrons (metal or nonmetal)

e) _____ tend to gain electrons (metal or nonmetal)

f) _____ have a positive charge. (cations or anions)

g) _____ have a negative charge. (cations or anions)

Fill in the table below:

	Element Name	Atomic Number	Atomic Mass	Number of Protons	Number of Neutrons	Number of Electrons	Ionic Charge
19	Nitrogen						
20.	Beryllium						
21	Iodine						

Fill in the table below:

	Calcium	Nitrogen
22. Metal or Nonmetal		
23. # of Valence Electrons		
24. Lewis dot diagram (for a neutral atom)		
25. Ionic Charge (+/- # electrons gained or lost to complete the outer shell)		
26. Is a cation or anion formed?		

27. Draw the electron transfer between calcium and nitrogen:

28. Draw the final picture for the ionic bond between calcium and nitrogen:

29. Write the formula for the ionic compound: _____

30. Write the compound name: _____

31. Draw the electron transfer and final ionic compound picture for potassium and bromine:

32. Draw the electron transfer and final ionic compound picture for : calcium and oxygen:

33. Write the chemical formula that would be produced from the listed ions using the ion criss – cross method.

	Cl^{1-}	O^{2-}	I^{1-}	P^{3-}	Br^{1-}	S^{2-}
Na^{1+}	Ex. NaCl					
Ba^{2+}						
K^{1+}						
Ca^{2+}						

34. Fill in the table below:

Elements	Charge of Each	Formula
Ca, Br	Ca^{2+} Br^{1-}	CaBr_2
Mg, O		
Li, I		
S, Ca		
Br, Na		
Sr, S		

35. Fill in the table below:

Formula	Charge of Each
Co_3N	Co^{1+} , N^{3-}
CuCl_2	
Fe_2O_3	